Services for the Analysis of the Greenland Environment (SAGE)

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What is SAGE?

The goal of this NASA ACCESS-funded project is to create multi-faceted web services for access, browse, online analysis and delivery of data sets important for understanding the processes that control the mass balance of Greenland's ice sheet.

SAGE incorporates many of NSIDC's existing subsetting, gridding, projection, and visualization tools into a modular services, invoked through a web-hosted geospatial data management system.

Here we describe the graphical user interface to SAGE. However, we also plan to expose as Web services much of the functionality described, thereby extending the options available to scientists for accessing data and analysis tools. The desired goal is enabling scientists to devote more time to research and less time to locating and processing data.

This work is part of a broader effort by NSIDC to rebuild a significant portion of its public-facing infrastructure in order to better meet the needs expressed by the cryospheric community. Termed Searchlight, this effort aims to provide users with data discovery interfaces, collaboration tools and mapping services. It will ultimately be expanded to cover most of NSIDC's cryospheric data

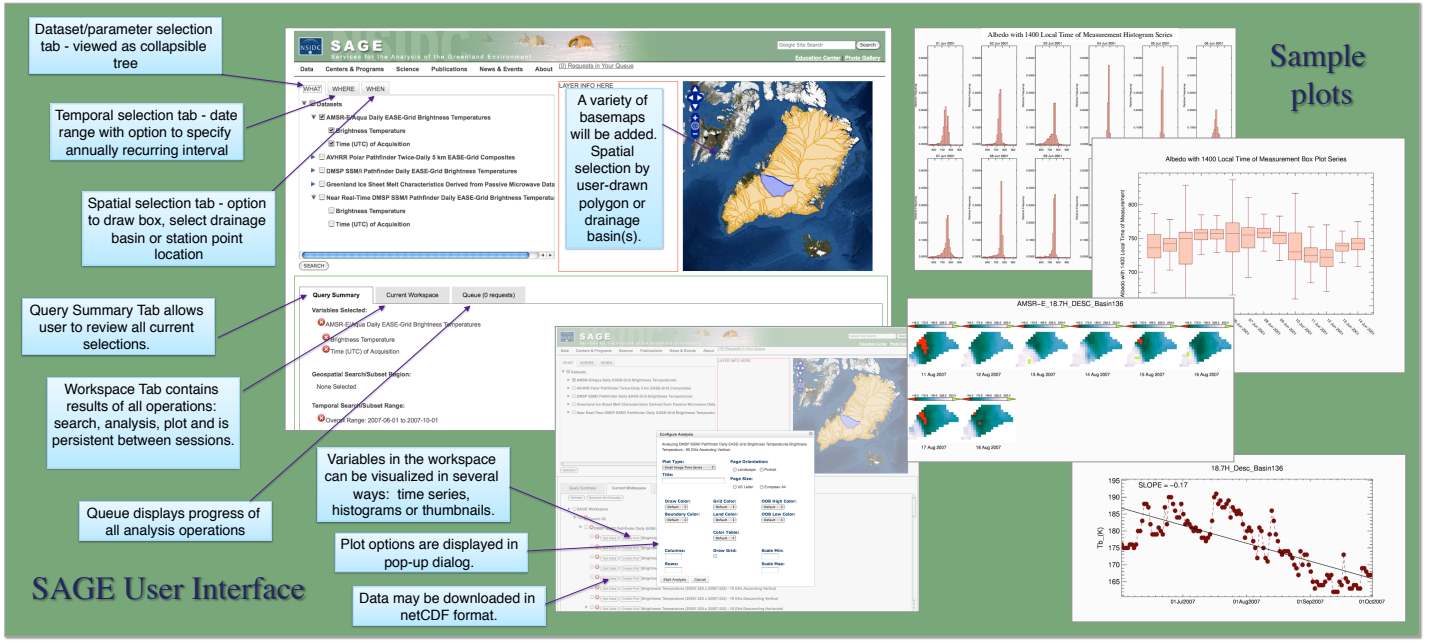
Data Sources

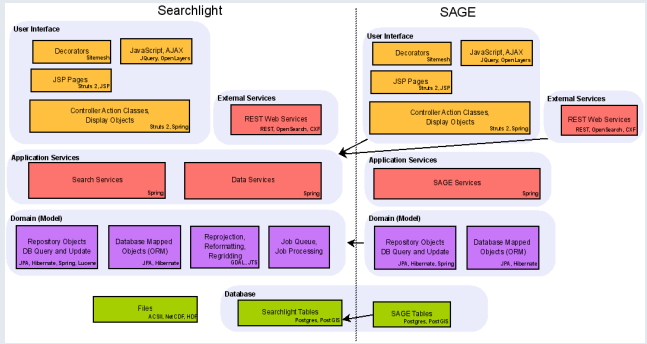
The data sets currently available through SAGE include microwave Brightness Temperatures from SSM/I and AMSR-E, AVHRR Polar Pathfinder products, and surface melt from SSM/I. We are planning to add data sets from MODIS, QuikSCAT, CERES, GLAS, ATM and meteorological data from GC-Net automatic weather stations.

Many of the data sets being considered for SAGE come from NASA's PARCA program (http://nsidc.org/data/parca/)

Introduction

The National Snow and Ice Data Center (NSIDC) is creating a resource, called Services for Analysis of the Greenland Environment (SAGE), to help scientists access, integrate and analyze data related to the history and status of Greenland's ice sheet.





Searchlight uses a layered architecture where any layer or component can be replaced without application impact, as layers depend only on components in the same or lower layers. A Services Layer allows external systems to access our collection without having to go through a user interface. A Workflow Manager sequences the processes needed to fulfill user requests. The SAGE architecture follows the same layered model, reusing appropriate parts of Searchlight and making project-specific extensions to support extended SAGE requirements.

Conclusions

SAGE exemplifies a new direction at NSIDC where specific science needs are addressed through in-place data analysis and simplified data access and delivery. Visualization and analysis options allow data exploration with user-specified aggregation, averaging, or sampling intervals. The underlying services of SAGE are being made accessible through standardized service protocols. Additional data and analysis services will be added in the future.